User Manual

Version 1.00

Pump Optimizer

Up to 1.1kW

230VAC Single Phase

GATOR POOL PUMP OPTIMIZER

User programmable multi speed swimming pool pump inverter (for 230VAC single phase [PSC] swimming pool pumps)

Preface

Thank you for purchasing the Gator Pool Pump Optimizer and we trust that along with effective management of your pools pumping system that you will also unlock good energy savings with this product. The Gator PPO is a product that has been designed to operate with most conventional 230VAC single phase swimming pool pump motors that adopt the permanent split capacitor (PSC) principle of operation. The Gator PPO has the ability to regulate the speed of your swimming pool pumps motor during preset (programmable) run times daily.

This manual provides the user with a guide on product safety, model identification, installation and wiring, power up and general operation, programming the unit, troubleshooting and maintenance. As the user, you are required to peruse the contents of this document carefully to familiarize yourself with the relevant know-how and specifically the notes on inverter safety before attempting to carry out any installation, setting, operation and or maintenance processes.

The technical specifications applied to this product or the content of this manual may be subject to change without prior notifying.

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1. Notes on Safety

1.1 General

(1) Installation.

- The Gator PPO must not be installed in a location where there are combustibles as this could lead to fire.
- The Gator PPO must not be installed in an environment that is exposed to flammable gases as this could lead to explosion.

(2) Wiring.

- Confirm that the positive/negative bus bar voltage is below 36V before performing any wiring on the Gator PPO
- Confirm that the power source is disconnected from the Gator PPO before any wiring operation is permitted.
- Do not try to connect the DC terminals (DC＋、DC－) on the Gator PPO to any external device.
- The terminal voltage of the incoming power supply must not exceed the rated voltage. This could lead to damage of the Gator PPO.
- The grounding terminal (PE) of the Gator PPO must be securely connected to earth (resistance to earth of ≤10Ω). Poor grounding can lead to the risk of electric fire.

(3) Check before switching on the power.

- Close the door cover of the Gator PPO before applying mains power to the unit.
- **Never** run the motor at a frequency greater than 50Hz.

(4) Precautions when power is applied and during operation.

- Do not open the door cover while power is applied to the Gator PPO.
- Do not handle the Gator PPO with wet hands. This could lead to electric shock.
- Do not control the running and stopping of the Gator PPO by switching the input power to the unit on and off.
- When reapplying power to the Gator PPO beware that the unit may start the motor automatically.

(5) Precautions during packaging and transportation.

- Do not place more than one Gator PPO in a carton packaging box.
- Do not put any heavy object/s on the Gator PPO.
- Do not open the door cover during transport.
- Do not apply any force on the keypad and the door cover while handling the Gator PPO.

(6) Disposal.

- Dispose of the Gator PPO as industrial waste.
- The electrolytic capacitors inside the inverter may explode if the unit is being incinerated.
- Plastic components of the inverter will generate toxic gases if the unit is being incinerated.

1.2 Other Precautions

(1) The Motor.

- Make certain that the cable between the Gator PPO and the pumps motor does not exceed 5m in length. If the cable cannot be shortened or the Gator PPO cannot be installed closer to the motor, you should **not** install this product.
- Motor insulation check before connecting the Gator PPO. When a motor is used for the first time or reused after it has not been used for a long period, the motor insulation must be inspected to

prevent the damage to the inverter cause by the failed insulation of the motor windings. Use a 500V voltage-type mega ohm meter to measure the insulation resistance, which should not be less than 5MΩ.

While performing the insulation test on the motor, be sure to disconnect the motor from the Gator PPO. Failing to do this will result in damage to the unit.

Do not perform the voltage resistance test and insulation test on the control circuit of the Gator PPO. This will result in damage to the unit.

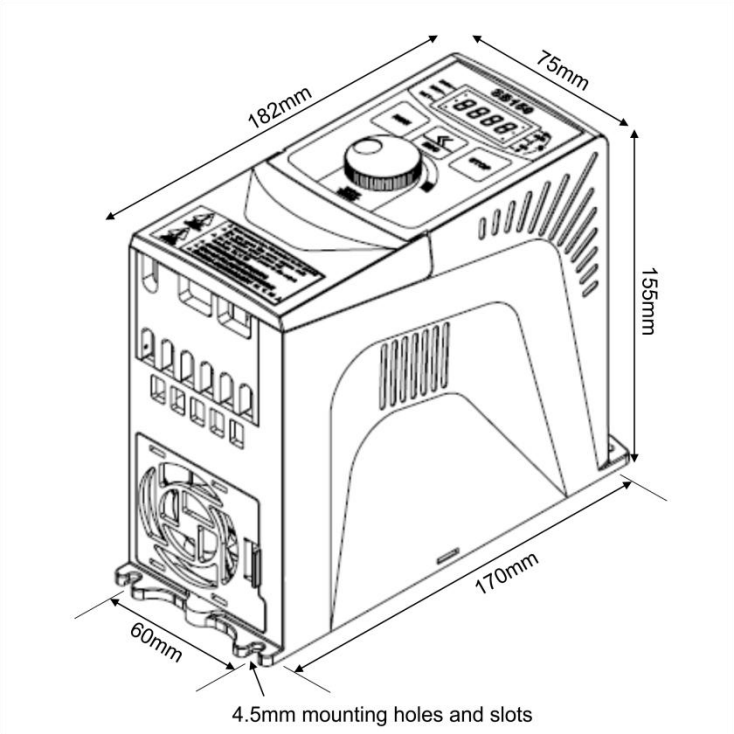
(2) The Gator PPO.

- Using the Gator PPO beyond the rated voltage value.
  It is not recommended to operate the Gator PPO beyond the range of the allowable input voltage. If the unit is to be subjected to an input voltage beyond the specified voltage range, increase or decrease the voltage via a voltage regulator.
- Over voltage and lightning protection.
  The Gator PPO has limited built-in protection for overvoltage and lightning. The product warranty does not however cover the product against a lightning strike or being subjected to over voltage conditions.

2. Specifications

- Input Voltage (supply voltage): 230VAC (±10%) Single Phase
- Output Voltage: 0 to Input Voltage (as specified above)
- Input Frequency: 47 to 63Hz (50Hz as standard)
- Output Frequency: 30 to 50Hz
- Protection Features: Over Current, over voltage, under voltage, motor overload
- Output Relay: This output that is switched concurrently to when the Gator PPO is running. TB-TA = Normally Open and TB-TC = Normally Closed. The contact rating for this relay is 3A at 230VAC or 5A at 24VDC

3. Dimensions



4. Model Identification

The Gator PPO is available in two models (as set out in the table below) each suited for motors with a different power ratings.

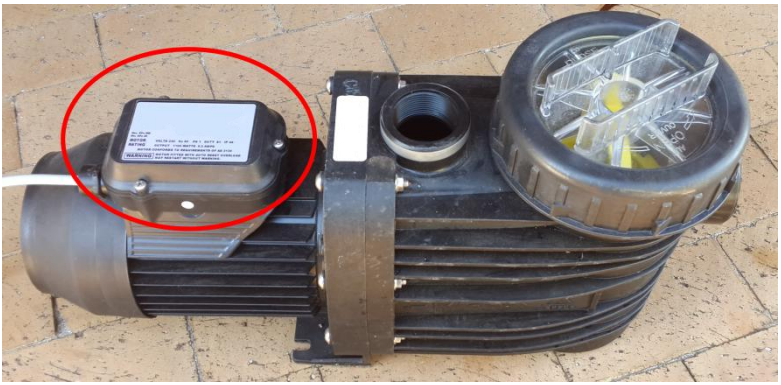
Model	Rated capacity (kVA)	Rated output current (A)	Applicable motor (kW)
SB150-0.75S2E-R	1.7	4.5	0.75
SB150-1.1S2E-R	2.3	6.0	1.1

Note!!! 1kilowatt = 1000 watts

Make certain before you continue with the installation of the unit that you have ordered and have been supplied with the correct model to suite your current pool pump. To determine whether you have ordered and have been supplied with the correct model, follow these steps.

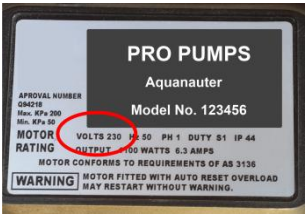
1

Locate the motors label on your pool pump. It will be located in a similar position to the label in the red circle in the image of a pool pump below.



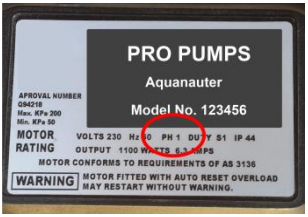
2

Make sure that the ***supply voltage*** required by the motor is 230 volt AC (220 to 240 volt AC is also acceptable). It should be indicated on the pump information labels as shown in the red circle in the image to the right.



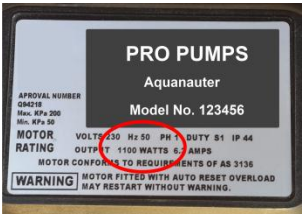
3

Make sure the number of ***phases*** required by the motor is 1PH or single phase. It should be indicated on the pump information labels as shown in the red circle in the image to the right.



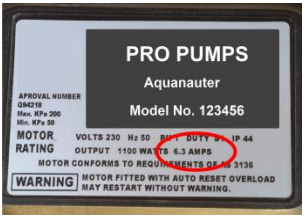
4

Make sure the ***power*** (watts or kilowatts) of the motor meets the detail on the Gator PPO's information label as shown on the right.. It should be indicated on the pumps information labels as shown in the red circle in the image to the right. It is acceptable to use a Gator PPO that is larger in power output than your pump's motor. For example if you have a 550 watt motor (0.55kW) you can use a 750 watt Gator PPO. You must never use a larger motor on a smaller Gator PPO. For example, a 1100watt (1.1kW) motor cannot work on a 750watt (0.75kW) Gator PPO.



5

Make sure the ***current*** (Amps) of the motor are less than or equal to the amperage rating on the Gator PPO's information label as shown on the right. It should be indicated on the pump's information labels as shown in the red circle in the image to the right.



6

Check that the required motor ***power*** (Step 4.) does not exceed the rated capacity as detailed on the label of the Gator PPO. Also check that the rated motor ***current*** (Step 5.) does exceed the rated current as detailed on the label of the Gator PPO. A sample of the label is shown in the image on the right.

Note!!! If you have ordered the incorrect Gator PPO, you should **NOT** proceed with the installation of the unit and report this without delay to Gator Products (Pty) Ltd so that the matter can be remedied.

5. Installation and Wiring

DANGER:

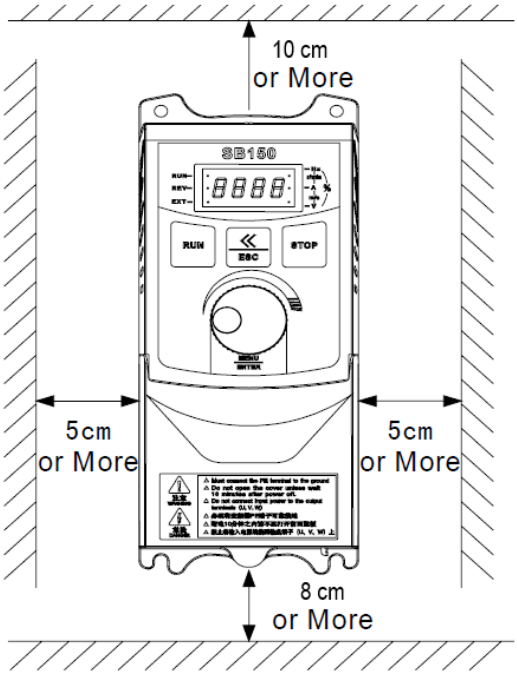
Installation of the Gator PPO should be carried out by a qualified electrician and failure to do so will render the warranty on the product void. Do not install and run the Gator PPO if there is any noticeable damage to the unit.

5.1 Mounting the unit

Mount the Gator PPO indoors or in a well ventilated enclosure, avoid direct sunlight and make sure that surroundings are free of dust, corrosive gases, inflammable gases, oil mist, water vapour, water drops and salt mist.

The Gator PPO should be mounted against a solid backing surface that is capable of handling the unit's weight. During the mounting process, avoid exerting excess force on the keypad, the rotary switch or the display.

Mount the Gator PPO in the vertical plane, as shown in the image below, using the mounting points provided. There are 2 x 4.5mm holes in the top of the unit and 2 x 4.5mm slot in the bottom of the unit available for this purpose. Make sure there is a minimum amount of free air space around the unit as stipulated in the image below.



5.2 Wiring the unit

DANGER:

- **Installation of the Gator PPO should be carried out by a qualified electrician and failure to do so will render the warranty on the product void.**
- **Before opening the cover door of the unit, make sure power has been removed from the unit and wait for at least 10 minutes after all indicators on the keypad go out.**
- **The inverter must be properly earthed.**
- **Shorting DC+ and DC- is prohibited.**
- **Connecting the main incoming power supply with U, V or W is prohibited.**
- **All terminals must be securely tightened before applying power to the unit.**

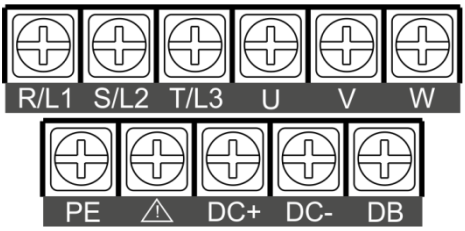
5.2.1. The incoming power supply circuit breaker

Before proceeding with the wiring of the Gator PPO, make certain there is an existing circuit breaker and that this breaker is suited for the model of Gator PPO that is to be installed. If a circuit breaker does not exist or if the breaker is not suited (as per the table below), the correctly sized circuit breaker should be purchased and installed.

Model #	Rated output current (A)	Applicable motor (kW)	Suggested Circuit Breaker Size (A)
SB150-0.75S2E-R	4.5	0.75	6
SB150-1.1S2E-R	6.0	1.1	10

5.2.2. The electrical connection terminals

The incoming power supply and motor connection terminals are located under the door cover at the base of the Gator PPO. They are arranged as per the image below.



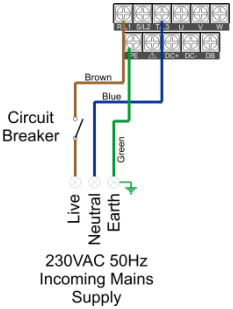
5.2.3. Connecting the incoming power supply

The 230VAC power supply should be connected to the unit as per the image on the right.

The 230VAC Live (brown) wire should be connected through a suitable circuit breaker (see 4.2.1.) onto the terminal marked “R/L1”

The 230VAC Neutral (blue) wire should be connected onto terminal marked “T/L3”

The Earth (green or yellow/green) should be connected to the terminal marked “PE”.



Note!!! The motor’s earth wire will also be connected to this terminal so leave sufficient space for this wire.

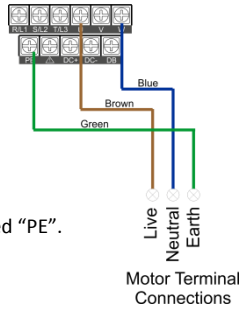
5.2.4. Connecting the motors wires

The motor wires should be connected to the unit as per the image on the right.

The brown wire should be connected onto the terminal marked “U”

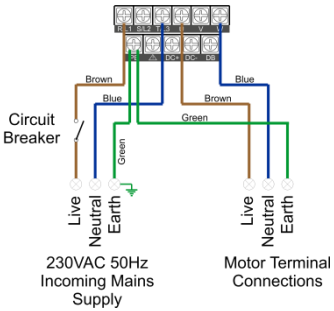
The blue wire should be connected onto terminal marked “W”

The Earth wire (green or yellow/green) should be connected to the terminal marked “PE”.



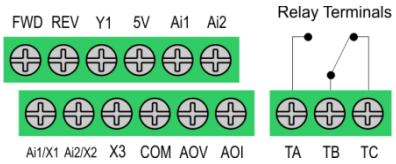
5.2.5. Checking the incoming power and motor connections

Once the wiring has been completed the connections should look the same as those in the image below.

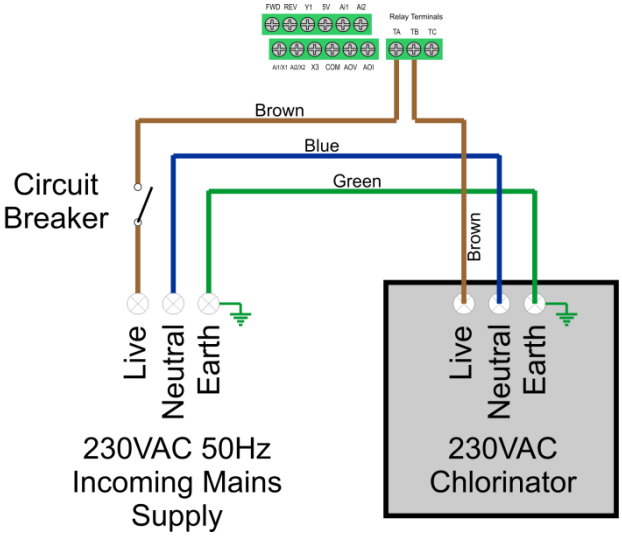


5.2.6. Connecting a chlorinator to the system

The Gator PPO has an additional internal switch (relay) that allows for other devices such as a chlorinator to be run while the Gator PPO is in operation. This relay has both normally open (TB – TA) or normally closed (TB – TC) connection terminals that are located under the door cover at the base of the unit.



To connect a device such as a chlorinator, the live wire from the power source to the device should be connected to terminals TA and the live wire from the device should be connected to terminal TB as shown in the image below.



Note!!! The contact rating for this relay is 5A at 230VAC or 3A at 24VDC

6. Power Up and General Operation

The Gator PPO is programmed to start the pump automatically. Be aware that when power is applied the pump may start immediately. Keep hands and items clear of the electrical and mechanical components of the system when applying power.

When receiving the Gator PPO, it should set to be in the automatic off state. Apply power to the Gator PPO by switching the circuit breaker on. The units LED display should have the message "A.Off" flashing. **Note!!!** Do not be concerned if this is not the case.

If the Gator PPO is in the "A.Off" (Automatic Off) state, return it to the normal auto run mode by pressing the "RUN + <<ESC" keys together continually for 2 seconds. The flashing message "A.Off" will disappear confirming that the unit is now in the automatic run mode.

In the automatic run mode, up to 4 daily run cycles can be pre programmed into the unit. Each daily run cycle has a start time a stop time and the speed at which the pump will run between these two times. The Gator PPO has a factory default setting with 2 pre programmed daily run cycles. The factory default settings for the 1st daily run cycle are: start at 09:00, stop at 11:00 and run at a speed of 45Hz. The factory default settings for the 2nd daily run cycle are: start at 21:00, stop at 03:00 and run at a speed of 35Hz. Instructions to change these settings is described in the Chapter 6 of this document under "Programming the Unit".

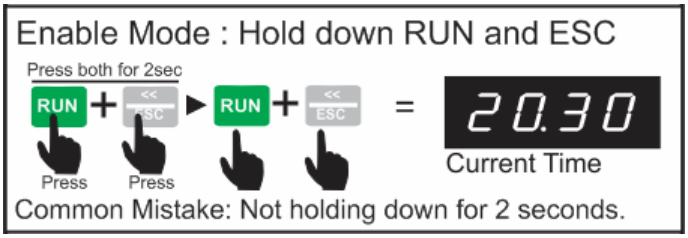
To check that the pump runs correctly, press "Run" Key. This will start the pump and ramp the pump's motor to 50Hz (the maximum speed). Leave the pump to run for a minimum of 5 minutes to make certain that the motor is running smoothly and that it runs reasonably cool. You should be able to put your hand on the motors casing and hold it there without it burning you. **Note!!!** If the motor shows any signs of running hot, immediately switch the pump off by pressing the "Stop" key. Once the motor has run for a period of about 5 minutes, press "Stop" key and the motor will stop.

Once you are satisfied that the pump is working correctly check the units current year, month / day and time and adjust these accordingly. Instruction to carry out these adjustments is described in the Chapter 6 of this document under "Programming the Unit".

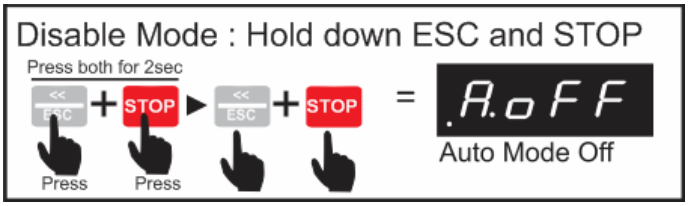
6.1. The Auto Run mode ("A.Off" - Automatic Off)

The Auto Run mode makes provision for the Gator PPO to be put into a dormant state where no automatic pump schedules can be started. This state is referred to as the "A.Off" or automatic off state. In the automatic off state the mains power supply to the unit remains on to keep the unit's time and date current. You would typically use this mode when you do not require your pool pump to work for a prolonged period of time (E.G. For a month or two in winter)

To remove the Gator PPO from the "A.Off" state and to return to the normal auto run mode, press "RUN + <<ESC" keys together continually for 2 seconds. The flashing message "A.Off" will disappear confirming that the unit is now in the normal run mode.



To invoke the "A.Off" (Automatic Off) state, press "STOP + <<ESC" keys together continually for 2 seconds. The flashing message "A.Off" will appear confirming that the unit has been set into the "A.Off" mode.



6.2. The manual override mode (maximum speed)

Should the need arise to run the pool pump at maximum speed to carry out tasks such as filter flushing, draining your pool or manual vacuum cleaning, press "Run" key to start the pump's motor and run the motor at the maximum speed.

Performing a manual override procedure while the Gator PPO is busy with an automatic daily run cycle

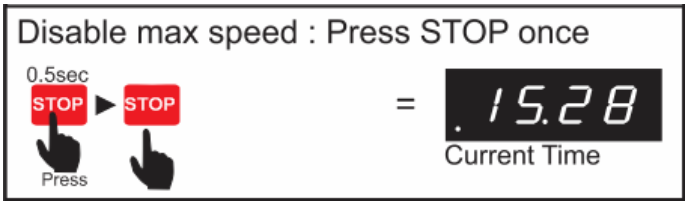
If the Gator PPO is busy with a regular daily automatic run cycle (the pump is already running) and "Run" key is pressed, the pump will immediately speed up to maximum speed and will remain at this speed for a maximum of 60 minutes or until "Stop" key is pressed.

If the Gator PPO was busy with a regular daily automatic run cycle before the manual override process was initiated and "Stop" key is pressed, the pump will immediately stop and ignore the balance of the automatic run cycle.

Performing a manual override procedure while the Gator PPO is idle

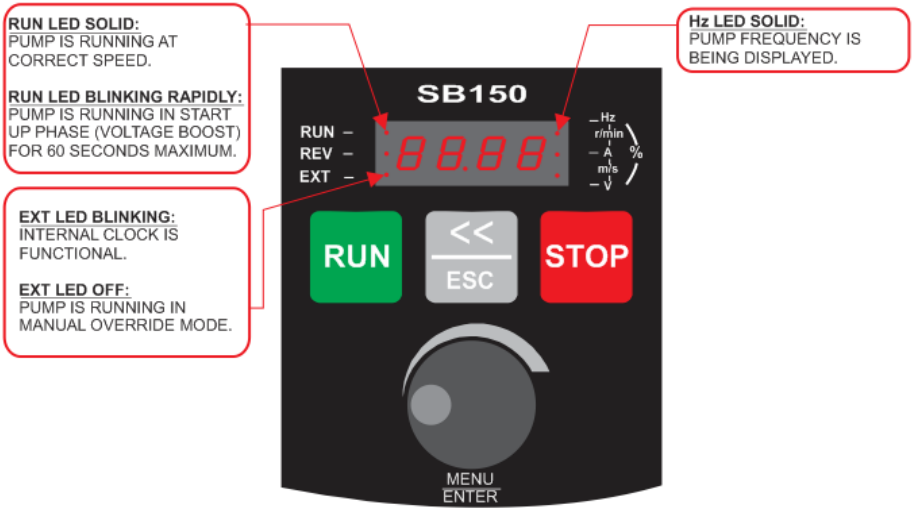
Press "Run" key and the pump will immediately speed up to maximum speed and will remain at this speed for a maximum of 60 minutes or until "Stop" key is pressed.

If the "Stop" key is pressed, the pump will immediately stop.



6.3. Information shown on the units display

When the Gator PPO is idle (the pump motor is off), the current time is displayed on the screen of the unit. While the Gator PPO is running (the pump motor is on) it is possible to view the current speed by pressing "<<ESC" Key. By toggling the "<<ESC" Key while the unit is running you will be toggling between current time and current speed. Also note the other minor advisory information the display provides as detailed in the call out boxes in the image below.



7. Programming the Unit

The Gator PPO makes use of a numbered menu driven programming system. The user can only enter one programming function group which is "F9" which relates to the automatic operational time settings in the unit. Within this function group there are a number of fields numbered from 0 to 34. Some field numbers between 0 and 34 cannot be accessed as they are not available and have no relevance to the operation of the unit. These fields each contain a variable that can be set to perform various tasks that are better described below.

7.1 Programming Tips

- To enter programming mode, press the rotary knob.
- Use the rotary knob to change the current value. Clockwise, increases the value. Anti-clockwise, decreases the value.
- Use the <<ESC key to move between each of the digits in the field that is being displayed
- Press the rotary knob to save a fields value.
- To exit programming mode and return to the status screen, press the <<ESC key for 2 seconds continually.

7.2 Programming the Current Year (F9-00).

1. Enter the programming mode by pressing the rotary knob. If F9-xx is already displayed, move to step 3 below.
2. F9-xx will be displayed. If this is not displayed press <<ESC once.
3. Turn the rotary knob (clockwise to increase or anticlockwise to decrease the xx value) until **F9-00** is displayed.
4. Press the rotary knob to enter the **F9-00** field.
5. The format of this field is shown as "ccyy" (cc = century and yy = year). For example 2014.
6. Turn the rotary knob to set the current year.
7. Use the <<ESC key to move between the "ccyy" digits and turn the knob to selected the correct value required.
8. Once the current year is selected press the rotary knob to set this value. The function field F9-01 will be displayed.
9. Continue to set other function fields or return to the status screen by pressing the >>ESC keys continually for 2 seconds.

7.3 Programming the current Month and Day (F9-01)

1. Enter the programming mode by pressing the rotary knob. If F9-xx is already displayed, move to step 3 below.
2. F9-xx will be displayed. If this is not displayed press <<ESC once.
3. Turn the rotary knob (clockwise to increase or anticlockwise to decrease the xx value) until **F9-01** is displayed.
4. Press the rotary knob to enter the **F9-01** field.
5. The format of this field is shown as "mmdd" (mm = months [1 to 12] and dd = days in month [1 to 31]). For example 0624 is June the 24th.
6. Turn the rotary knob to set the current day.
7. Use the <<ESC key to move between the "mmdd" digits and turn the knob to selected the correct value required.
8. Once the current month and day is selected press the rotary knob to set this value. The function field F9-02 will be displayed.

9. Continue to set other function fields or return to the status screen by pressing the >>ESC keys continually for 2 seconds.

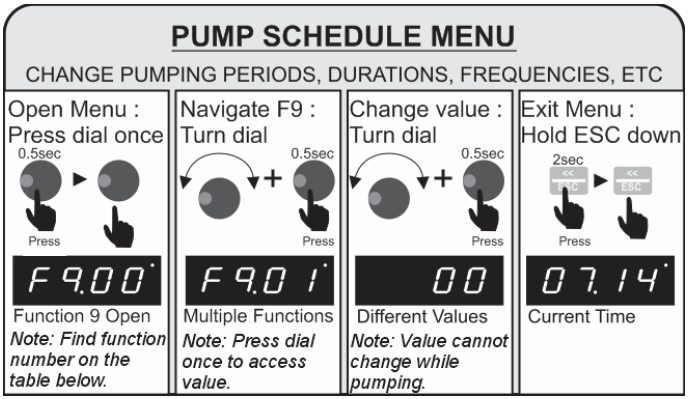
7.4 Programming the Current Time (F9-02)

1. Enter the programming mode by pressing the rotary knob. If F9-xx is already displayed, move to step 3 below.
2. F9-xx will be displayed. If this is not displayed press <<ESC once.
3. Turn the rotary knob (clockwise to increase or anticlockwise to decrease the xx value) until **F9-02** is displayed.
4. Press the rotary knob to enter the **F9-02** field.
5. The format of this field is shown as "hh:mm" (hh = hour [00 to 24] and mm = minute [00 to 59]). For example 23:56. **Note!!! Midnight is 24:00 and the time 00:00 does not exist.**
6. Turn the rotary knob to set the current time.
7. Use the <<ESC key to move between the "hhmm" digits and turn the knob to selected the correct value required.
8. Once the current hour and minute is selected, press the rotary knob to set this value. The function field F9-03 will be displayed.
9. Continue to set other function fields or return to the status screen by pressing the >>ESC keys continually for 2 seconds.

7.5 Programming the 1st daily run cycle (F9-03), (F9-04) and (F9-20)

1. Enter the programming mode by pressing the rotary knob. If F9-xx is already displayed, move to step 3 below.
2. F9-xx will be displayed. If this is not displayed press <<ESC once.
3. Turn the rotary knob (clockwise to increase or anticlockwise to decrease the xx value) until **F9-03 (start time)** is displayed.
4. Press the rotary knob to enter the **F9-03 (start time)** field.
5. The format of this field is shown as "hh:mm" and the factory default setting is 10:00 (hh = hour [00 to 24] and mm = minute [00 to 59]). **Note!!! Midnight is 24:00 and the time 00:00 means there is no start time programmed for this cycle.**
6. Turn the rotary knob to set cycle one's start time.
7. Use the <<ESC key to move between the "hhmm" digits and turn the knob to selected the correct value required.
8. Once cycle one's start time is selected, press the rotary knob to set this value. The function field F9-04 will be displayed.
9. Press the rotary knob to enter the **F9-04 (stop time)** field.
10. The format of this field is shown as "hh:mm" and the factory default setting is 12:00 (hh = hour [00 to 24] and mm = minute [00 to 59]). **Note!!! Midnight is 24:00 and the time 00:00 means there is no start time programmed for this cycle.**
11. Turn the rotary knob to set cycle one's stop time.
12. Use the <<ESC key to move between the "hhmm" digits and turn the knob to selected the correct value required.
13. Once cycle one's stop time is selected, press the rotary knob to set this value. The function field F9-05 will be displayed.
14. Turn the rotary knob to the **F9-20 (speed)** field.
15. Press the rotary knob to enter the **F9-20 (speed)** field.
16. The format of this field is shown as "ss" and the factory default setting is 45 (ss = Hz [30 to 50]). **Note!!! The minimum selectable speed is 30Hz and the maximum is 50Hz**
17. Turn the rotary knob to set the speed for cycle one.

18. Use the <<ESC key to move between the “ss” digits and turn the knob to selected the correct value required.
19. Once cycle one’s speed is selected, press the rotary knob to set this value. The function field F9-21 will be displayed.
20. Continue to set other function fields or return to the status screen by pressing the >>ESC keys continually for 2 seconds.



7.6 Programming the 2nd, 3rd and 4th daily run cycles

To program the 2nd, 3rd and 4th daily run cycles, follow the steps as set out in 7.5 above using the list of function fields as per the table below.

Daily Cycle Number	Start Time Function Number for this Cycle	Stop Time Function Number for this Cycle	Running Speed for this Cycle
1	F9-03 (Default = 10:00)	F9-04 (Default = 12:00)	F9-20 (Default = 45Hz)
2	F9-05 (Default = 21:00)	F9-06 (Default = 03:00)	F9-22 (Default = 35Hz)
3	F9-07 (Default = 00:00 Off)	F9-08 (Default = 00:00 Off)	F9-24 (Default = 30Hz
4	F9-09 (Default = 00:00 Off)	F9-10 (Default = 00:00 Off)	F9-26 (Default = 30Hz)

If you have no intentions to run a specific daily run cycle, simply set the Start and Stop times to 00:00. This particular daily run cycle will be ignored.

7.7 Programming the days on which to run each week

It is possible to select which days of the week you wish to run the Gator PPO. Follow these steps to set each day of the week.

1. Enter the programming mode by pressing the rotary knob. If F9-xx is already displayed, move to step 3 below.
2. F9-xx will be displayed. If this is not displayed press <<ESC once.

3. Turn the rotary knob (clockwise to increase or anticlockwise to decrease the xx value) until **F9-28 (the run state for Sunday)** is displayed.
4. Press the rotary knob to enter the **F9-28** field.
5. The format of this field is shown as a "0" (means off) or "1" (means on) and the factory default setting is "1" (On).
6. Turn the rotary knob to set **Sunday** on ("1") or off("0").
7. Once Sunday's run value has been selected, press the rotary knob to set this value. The function field **F9-29 (the run state for Monday)** is displayed.
8. Press the rotary knob to enter the **F9-29** field.
9. Turn the rotary knob to set **Monday** on ("1") or off("0").
10. Once Monday's run value has been selected, press the rotary knob to set this value. The function field **F9-30 (the run state for Tuesday)** is displayed.
11. Repeat this process for F9-30 (Tuesday), F9-31 (Wednesday), F9-32 (Thursday), F9-33 (Friday) and F9-34 (Saturday)

Of course it's also possible to set any one of the weekdays run state by entering that specific days function field at selecting "0" for off and "1" for on. Each days function field number is listed below.

Weekday	Function field to set run state	Factory default run state
Sunday	F9-28	1 = On
Monday	F9-29	1 = On
Tuesday	F9-30	1 = On
Wednesday	F9-31	1 = On
Thursday	F9-32	1 = On
Friday	F9-33	1 = On
Saturday	F9-34	1 = On

8. Troubleshooting

The Gator PPO appears to be running but my pump's motor is not working.

- Some pump motors have thermal overload relays and this may have tripped preventing the motor from running when being powered by the Gator PPO. Leave the pump for several minutes allowing it to cool down then try restarting the unit. If the problem persists, you should call an electrician for further assistance.
- The wiring between the Gator PPO and the pump is incorrect. You should call an electrician for further assistance.

The Gator PPO does not start the pump automatically.

- Make sure daily start and stop times are programmed into the unit and that these times are sequential to each other. For example a start time of 21:00 and a stop time of 03:00 would mean that the system would run over midnight into the next day. See 7.5 and 7.6
- Make sure you have programmed the unit to operate on the specific day you require it to operate. See 7.7
- Make sure the unit has the correct current year, current month / day and current time programmed. See 7.2, 7.3 and 7.4
- Make sure the unit is not set in the automatic off "A.Off" state. See 6.1

The Gator PPO displays an error code.

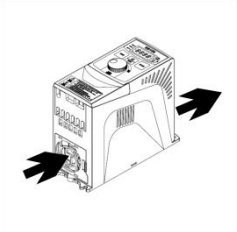
An error code will be displayed as "E.xxx". The Gator PPO has been designed to provide the best possible protection of the unit and motor and as such there are many different types of errors that the unit is able to act on and report on. When an error occurs write this down for record keeping and attempt to reset the Gator PPO by pressing "Stop" key. If an error reoccurs frequently or persists making it impossible to run the Gator PPO, you should call Gator Products (Pty) Ltd for further assistance.

9. Maintenance

The Gator PPO is designed to require minimal maintenance however it is necessary to carry out periodical checks. Remove power to the unit and wait a minimum of 15 minutes before performing the following checks.

Every 3 months.

- Clean dust and general dirt from the Gator PPO and the unit's enclosure using a dry cloth, soft dry brush or vacuum cleaner.
- Make sure the cooling duct at the rear of the Gator PPO is clear of any dirt or blockages.

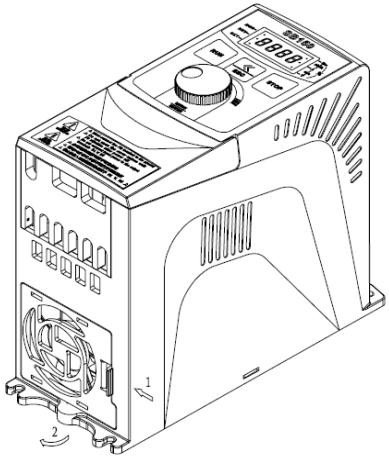


Cooling Duct

Every 12 months.

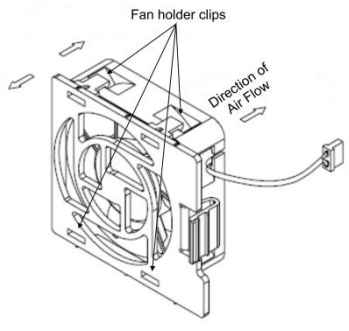
- Take the appropriate screw driver and check that all electrical terminal connections are tight.
- Check that all electrical wiring is a good condition.
- Check the condition of the cooling fan and replace if necessary as per the steps below.

1. Remove the cooling fan holder from the base of the unit by unclipping the fan holder assembly using the snap clip.
2. Rotate the fan holder downwards to approximately 45 degree angle and draw the fan assembly out of the unit's enclosure body.

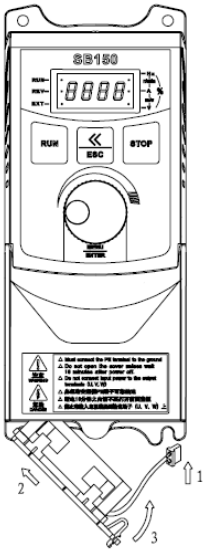


3. Disconnect the power plug and remove the fan housing completely.
4. Use your finger and rotate the fans blades to make sure the blades rotate freely.

5. If the fan has seized and needs replacing, unclip the fan from the fan holder by gently opening the fan holder clips and separate the fan from the holder.



6. Replace the new fan making sure that the direction of air flow, as indicated on the fan, is as per the above sketch.
7. Insert the fans power plug into the socket in the Gator PPO and install the fans holder assembly back into the Gator PPO's enclosure body as shown in the sketch below.



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